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BLACKFOOT RIVER RAPTOR INVENTORY

Prepared for the
Bureau of Land Management

by

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TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	iii
LIST OF TABLES	iv
LIST OF FIGURES	v
LIST OF APPENDICES	vi
ABSTRACT	vii
INTRODUCTION	1
STUDY AREA	1
METHODS	4
RESULTS/DISCUSSION	5
General Discussion	5
Golden Eagles	12
Red-tailed Hawks	14
Prairie Falcons	15
Cooper's Hawks	15
Great Horned Owls	16
Northern Saw-whet Owls	17
Other Raptors, Turkey Vultures, and Ravens	17
Other Birds	18
MANAGEMENT IMPLICATIONS	19
LITERATURE CITED	21
APPENDICES	25

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LIST OF TABLES

	Page
1. Numbers of territorial pairs and known breeding attempts by raptors, turkey vultures, and common ravens in the 38 km river corridor of the Blackfoot River study area, 1989.	6
2. Comparative nesting densities of 3 species of raptors in the Blackfoot River (BRSA) (38 km), Twin Falls (TFSA) (36 km), and Snake River Birds Prey (SRBPA) (140 km) study areas [data taken from Howard and Sather-Blair (1983)].	10
3. Structure and habitat of occupied nest sites in the Blackfoot River study area, 1989.	13
4. Raptor density and spatial relationships along 38 km of the Blackfoot River, Bingham County, Idaho, 1989.	14

LIST OF FIGURES

	Page
1. Blackfoot River study area in Bingham County, Idaho	2
2. Blackfoot River study area boundaries (500 m on each side of the river) and land ownership	3
3. Distribution of 43 territories occupied by 10 species in the Blackfoot River study area, 1989.	7
4. Distribution of diurnal raptors known to breed in the Blackfoot River study area, 1989.	8
5. Known locations of Uinta ground squirrels in the Blackfoot River study area, 1989.	11

LIST OF APPENDICES

	Page
A. Bird species identified in the Blackfoot River study area during March-July 1989	25
B. Amphibian and reptile species observed and expected [based on Groves (1989)] in the Blackfoot River study area.	30
C. U.S. Department of the Interior Bureau of Land Management nest observation record.	31
D. Blackfoot River raptor data	32
E. List and distribution (see page 2 of Appendix E) of raptor nests found outside the Blackfoot River study area along roads in peripheral areas.	35
F. Distribution of occupied golden eagle territories in the Blackfoot River study area, 1989.	37
G. Distribution of occupied red-tailed hawk territories in the Blackfoot River study area, 1989.	38
H. Distribution of occupied and breeding prairie falcons in the Blackfoot study area, 1989.	39
I. Distribution of occupied and breeding Cooper's hawks in the Blackfoot River study area, 1989.	40
J. Distribution of singing great horned owls in the Blackfoot River study area, 1989.	41
K. Distribution of singing northern saw-whet owls in the Blackfoot River study area, 1989.	42

ABSTRACT

During April-July 1989, a raptor inventory was conducted along 38 km of the Blackfoot River in southeastern Idaho. Diurnal raptors were surveyed by foot and owls were surveyed by playing tape recorded songs of 4 owl species. Forty-three pairs of 10 species were found occupying territories, including 6 species of diurnal raptors (golden eagles, red-tailed hawks, Swainson's hawks, prairie falcons, American kestrels, and Cooper's hawks), 2 species of owls (great horned owls and northern saw-whet owls), turkey vultures, and common ravens. Of the 18 territories where nests were located, 66% (N = 12) of the paired birds at those territories were known to breed. No owl nests were located in the study area. Raptors, vultures, and ravens averaged 1.13 pairs per km of river. Potential threats to raptors and their habitat in the Blackfoot River area include hydroelectric development of the river, livestock grazing, agricultural development, utility lines, mining, and recreation.

INTRODUCTION

The Blackfoot River in southeastern Idaho has been designated by the U.S. Bureau of Land Management (BLM) as a "key raptor area" because of its special habitat features and abundance of raptors (Olendorff et al. 1989). This designation indicates that future planning and management of this area for raptors should be a priority for the BLM. Developing a raptor management plan is especially important now because of recent changes in livestock grazing in the riparian corridor (USDI 1987) and a proposed hydropower project on the river (FERC No. 10672). Other land-use actions in the area that could affect raptors and other wildlife include utility lines, farming, mining, and recreation. Raptors are sensitive indicators of habitat conditions and are generally among the first group of birds to decline when habitats are lost or degraded (Hickey 1969). Conducting inventories and implementing monitoring programs are necessary for proper management and for evaluating effects of land-use changes on wildlife species of concern.

A cursory inventory of breeding raptors was conducted in spring 1988 (3 field trips) along the Blackfoot River. Of the nine raptor species observed [Cooper's hawk, sharp-shinned hawk, northern harrier, red-tailed hawk, Swainson's hawk, golden eagle, prairie falcon, American kestrel, and long-eared owl (see Appendix A for scientific names)] and turkey vultures (considered ecological equivalent of raptors), 29 nesting territories were identified. In winter 1989, the BLM initiated a season-long study to survey breeding raptors in the Blackfoot River Canyon. The study was conducted by the U. S. Fish and Wildlife Service (FWS) and objectives were to (1) determine distribution and density of nesting territories, and (2) determine number of breeding attempts at nesting territories. The purpose of this study was to collect information that would be useful in developing a raptor habitat management plan for the Blackfoot River.

STUDY AREA

The Blackfoot River study area (BRSA) included 38 km (24 mi.) of the Blackfoot River canyon in Bingham County, Idaho (Figure 1). The study area boundaries were within the canyon rim (generally less than 1 km wide) from Wolverine Creek upstream to Morgan Bridge (Figure 2). Elevations ranged from 1424 m (4700 ft) to 1818 m (6000 ft). Annual precipitation averaged 28-33 cm (11-13 in.) (USDA 1973). Soils were well drained and deep silt loams formed in calcareous loess (USDA 1973). About 22 km (14 mi.) of the lower study area (Beaver Creek to Wolverine Creek) was bordered by BLM land on the east and Fort Hall Indian Reservation on the west (Figure 2). BLM land bordered most of the river in the upstream section of the study area. Dominant land uses have been livestock grazing and dryland farming.

The river corridor was characterized by basalt cliffs and a narrow riparian area with little accessibility. Six cover types were identified in the study area: (1) sagebrush (Artemisia spp.), composed primarily by A. tridentata vaseyana and A. tripartita; (2) Douglas-fir (Pseudotsuga menziesii), which occurred in patches within the canyon rims; (3) juniper (Juniperus osteosperma and J. scopulorum); (4) quaking aspen (Populus tremuloides), which occurred in patches; (5) riparian, dominated by water birch (Betula occidentalis) with lesser amounts of red-osier dogwood (Cornus

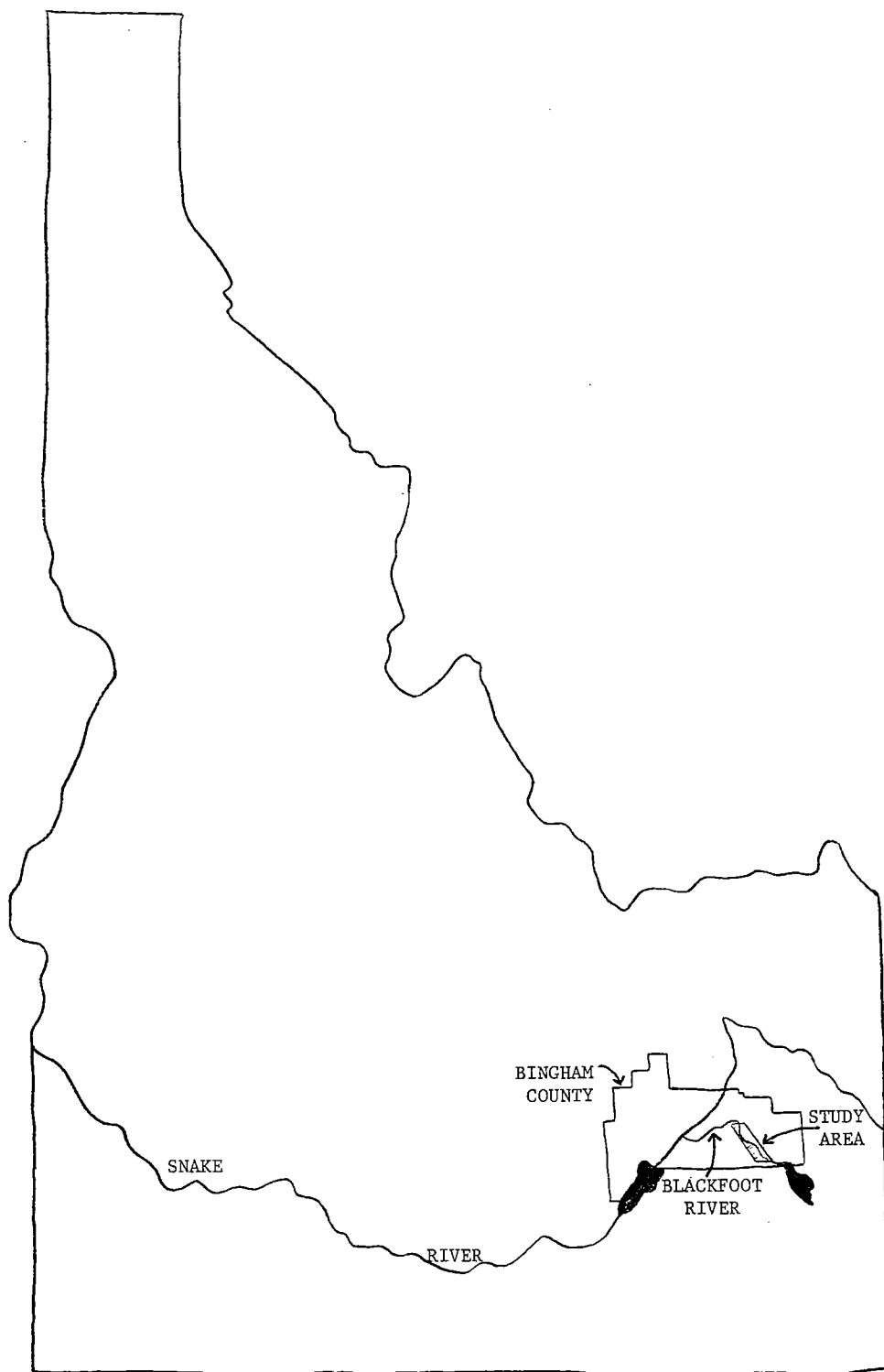


Figure 1. Blackfoot River study area in Bingham County, Idaho.

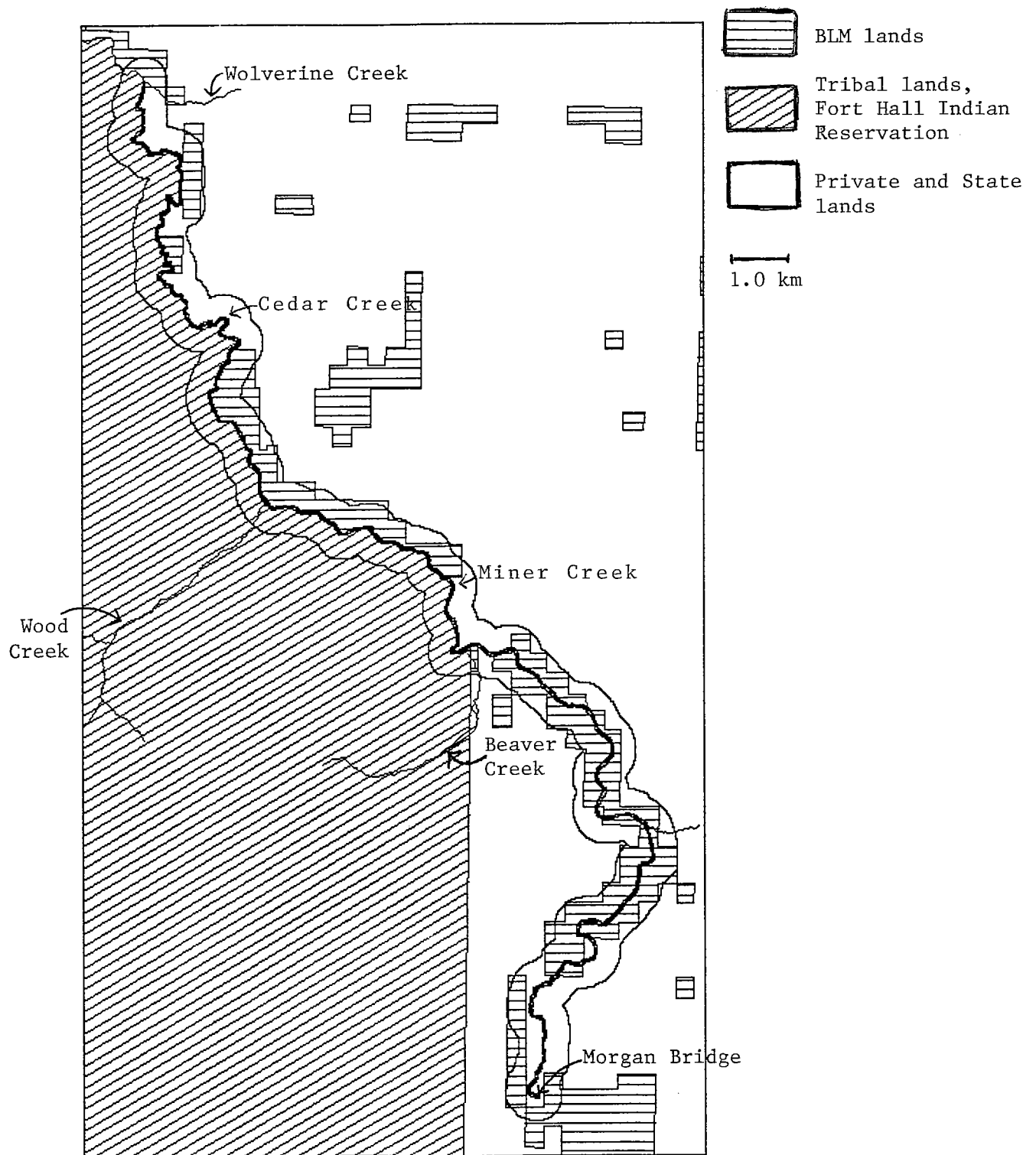


Figure 2. Blackfoot River study area boundaries (500 m on each side of the river) and land ownership.

stolonifera), mountain alder (Alnus incana), and willow (Salix spp.); and (6) agriculture, which included cultivated crops and pastureland.

The diversity of vegetation types in the BRSA provided habitat for a variety of wildlife, including 103 species of birds identified during the study (see Appendix A). Several bird species that occur in the study area have been given special status by state and federal agencies because of the species' restricted range, specific habitat requirements, and/or low numbers. Swainson's hawk are listed by BLM as sensitive species. Sharp-tailed grouse are listed by BLM as sensitive and are also designated as candidate species by FWS. Ferruginous hawks and merlins are occasionally seen in the area and both have been identified by Idaho Department of Fish and Game as species of special concern and by BLM as sensitive species. Bald eagles, a federally listed endangered species, winter along sections of the Blackfoot River. An abundance of cliffs and rock doves provide potential nesting habitat for the federally endangered peregrine falcon, which was released for reintroduction (in 1988 and 1989) at Grays Lake, about 45 km (28 mi.) southeast of the BRSA.

Big game species on the study area include an abundance of mule deer (Odocoileus hemionus), and fewer numbers of moose (Alces alces) and elk (Cervus canadensis), all of which use the area primarily in winter and early spring. Other conspicuous mammals found in the study area include white-tailed jackrabbits (Lepus townsendii), Nuttall's cottontails (Sylvilagus nuttallii), least chipmunks (Tamias minimus), yellow-bellied marmots (Marmota flaviventris), Uinta ground squirrels (Spermophilus armatus) (see Zeveloff 1988), red squirrels (Tamiasciurus hudsonicus), beavers (Castor canadensis), and red fox (Vulpes vulpes). Amphibians and reptiles observed and expected in the study area are listed in Appendix B.

METHODS

Foot surveys were used to search for nests of diurnal raptors. River sections were surveyed every week from 10 April through 21 June, and nest fates checked on 13, 17, and 18 July. Nest fate was not determined for several nests because the principal investigator was unable to conduct field work (due to an accident) after 21 June. For raptor and other wildlife sightings, observers recorded the species, age class, sex (if possible), activity, location, cover type, and time.

Rim tops, cliff bases, and stream bottoms were walked on both sides of the river when possible. Cliffs and rock outcrops were inspected for rocks stained with whitewash (feces), decorated or repaired nests, perches, plucking perches, and regurgitated pellets (Fuller and Mosher 1981, 1987; Reynolds 1982; Kochert 1986). Forest patches were searched for stick nests, cavities, perches, molted feathers, plucking perches, and prey remains. Behavioral observations were also used to locate nests. We watched for courtship displays, food deliveries, food transfers, copulation, nest building, active defense and calling by adults, and food begging by young (Fuller and Mosher 1981, 1987; Kochert 1986). Where territorial pairs were present, most of our time was spent locating nests of golden eagles, red-tailed hawks, prairie falcons, and Cooper's hawks, with little time spent trying to locate nests of kestrels, vultures, and owls. Raptor observations and nest sites were recorded in 1 of 6 cover types (see descriptions in above section).

Tape-recorded songs of owls (great horned, northern saw-whet, western screech, and long-eared) were used to survey owls by listening for an elicited response. Recordings to detect owls were used from 0.5 hr after sunset until about 0100 the next morning every week from 10 April (starting at Wolverine Creek) to 10 May (ending at Morgan Bridge). Surveys were not conducted during inclement weather. We used a portable cassette tape player that was wired to a Portapage Megaphone to broadcast owl calls for 2-5 minutes at each stop, rotating the direction of the speaker after each set of calls. We remained at the stop for 3-5 minutes after the last broadcast to listen for a response. For continuous coverage, stops were spaced at 0.8 km (0.5 mi.) intervals along the canyon rim or riparian, or 0.4 km (0.25 mi) intervals where the noise from the river made it difficult to hear long distances. Suggestions for owl survey methods were provided by Greg Hayward (Univ. of Idaho) and described in Groves (1988). Approximate locations of vocal or visual detections, elicited from the recordings, were plotted on maps.

Tape-recorded songs of great horned owls were used to elicit a response from nesting Cooper's hawks (Johnson et al. 1981, Rosenfield 1985, Fuller and Mosher 1987). Owl songs were broadcast for 1-3 minutes, about every 5-10 minutes, while walking through forest patches and when near suspected Cooper's hawk nests. We walked slowly during playing of the tape and intermittently stopped to wait for a response.

Nesting areas were visited at least twice to confirm occupancy and breeding attempts. A pair of birds and, in some cases, territories occupied by a single adult constituted evidence for occupancy. Pairs of birds that showed no evidence of egg laying after repeated observations or after climbing into and examining potential nests were categorized as nonbreeding. A breeding attempt was confirmed if an occupied territory contained an incubating adult, eggs, young, or any other sign that eggs were laid (Steenhof 1987). The breeding attempt was considered successful if 1 or more young reached 80% of the age at which young normally leave the nest (Steenhof and Kochert 1982). Ageing keys developed by Hoechlin (1976) and Moritsch (1983a, 1983b) were used to age young of golden eagles, and prairie falcons and red-tailed hawks, respectively.

Nest locations were plotted on 7.5' topographic maps and digitized at U.S. Geological Survey. Coordinate values from the nest locations were entered into a data base (dBase III) and then imported into MOSS (a Geographic Information System). Information regarding nest visits were recorded on nest observation cards developed by the BLM (USDI 1982) (Appendix C). Data on nest sites were entered into a dBase III file (Appendix D).

RESULTS/DISCUSSION

General Discussion

Forty-three pairs of 10 species were found occupying territories in the BRSA, including 6 species of diurnal raptors, 2 species of owls, turkey vultures, and common ravens (Table 1). Of the 18 territories where nests were located (Figure 3), 66% of the paired birds at those territories were known to breed (Figure 4). Old stick nests built by red-tailed hawks, golden eagles, ravens, and Cooper's hawks were found at 11 unoccupied sites within the river corridor (see Appendix D). Six breeding pairs of raptors, 4 red-tailed hawks

and 2 great horned owls, were found incidentally while travelling peripheral areas outside the study area boundary (Appendix E).

Table 1. Numbers of territorial pairs and known breeding attempts by raptors, turkey vultures, and common ravens in the 38 km river corridor of the Blackfoot River study area, 1989.

Species	No. Territorial Pairs	No. Known Breeding Attempts
Golden eagle	6 ^a	1
Red-tailed hawk	5	4
Prairie falcon	2	2
Cooper's hawk	3	3
Swainson's hawk	1	NL ^b
American kestrel	6	NL
Great horned owl	7 ^c	NL
Northern saw-whet owl	4 ^c	NL
Turkey vulture	6	NL
Common raven	<u>3</u>	2
Total	43	

^a Includes a site where a single adult was observed on 2 occasions near an eagle nest that was not decorated.

^b No nests located.

^c Based on voiced responses to tape recordings of owl songs.

Raptors in our study area averaged 0.89 pairs per km of river. Including vultures and ravens, the average was 1.13 pairs per km of river. We compared these averages to those of similiar habitat (basalt cliffs and sagebrush uplands) and species composition. Olendorff (1973) reported 0.24 pairs of large raptors per km of the Columbia River in Washington. He considered this low concentration a result of low prey populations and scarcity of suitable

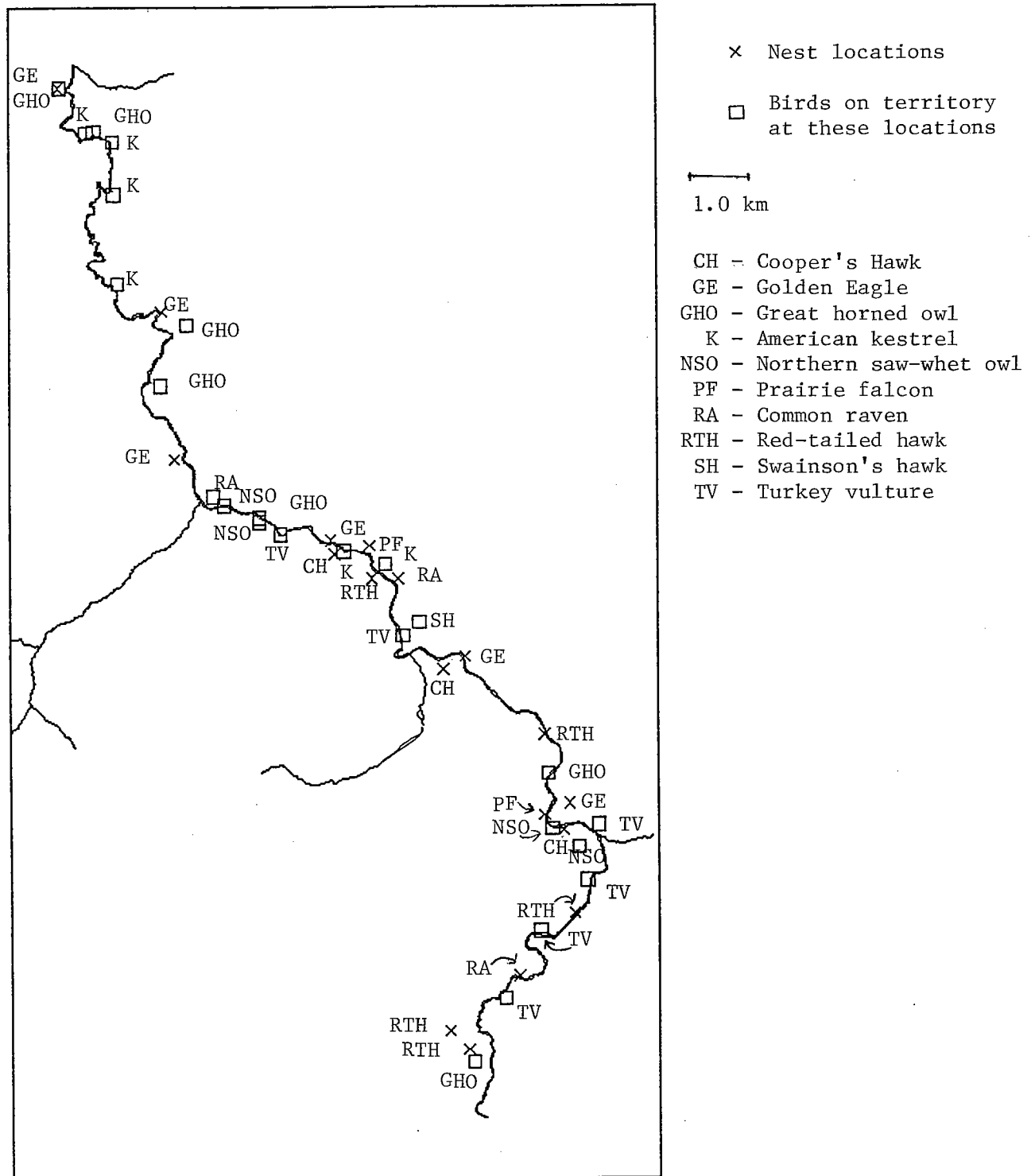


Figure 3. Distribution of 43 territories occupied by 10 species in the Blackfoot River study area, 1989.

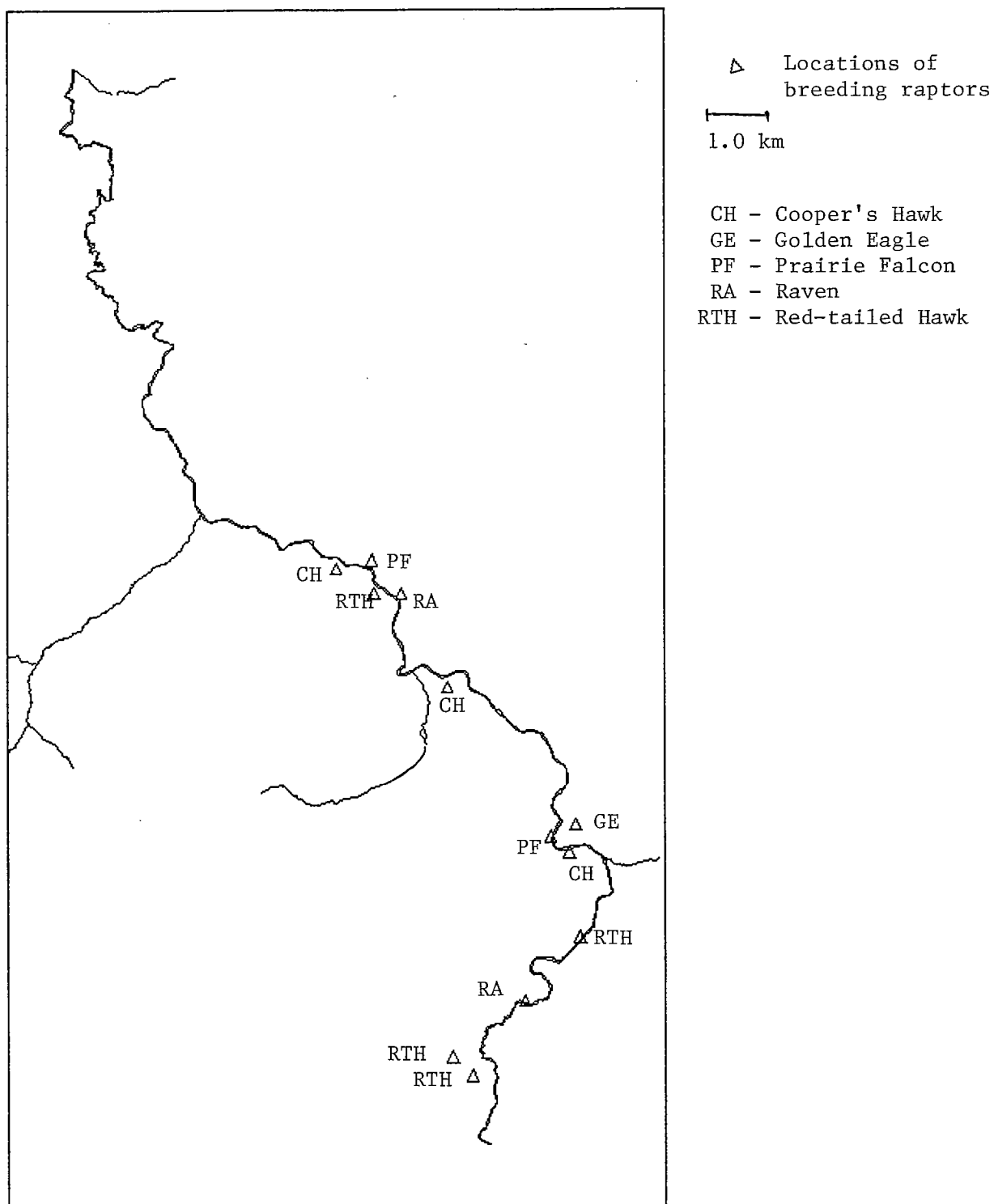


Figure 4. Distribution of diurnal raptors known to breed in the Blackfoot River study area, 1989.